

PCG-GRX520/GRX520K/GRX520P/GRX560/GRX560K/ PCG-GRX560P/GRX580/GRX580K/GRX580P/**GRX650**

SERVICE MANUAL

Ver 2-2002I

Revision History

Lineup : PCG-GRX580P
PCG-GRX580K
PCG-GRX580
PCG-GRX560P
PCG-GRX560K
PCG-GRX560
PCG-GRX520P
PCG-GRX520K
PCG-GRX520
PCG-GRX650



Illust : PCG-GRX580P

For American Area
US Model
Canadian Model



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- Design and specifications are subject to change without notice.

NOTEBOOK COMPUTER

SONY®

All other names of systems, products and services in this manual are trademarks or registered trademarks of their respective owners. In this manual, the (TM) or (R) mark are not specified.

Caution Markings for Lithium/Ion Battery - The following or similar texts shall be provided on battery pack of equipment or in both the operating and the service instructions.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

CAUTION: The battery pack used in this device may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F) or incinerate.

Dispose of used battery promptly.

Keep away from children.

CAUTION: Changing the back up battery.

- Overcharging, short circuiting, reverse charging, multilation or incineration of the cells must be avoided to prevent one or more of the following occurrences; release of toxic materials, release of hydrogen and/or oxygen gas, rise in surface temperature.
- If a cell has leaked or vented, it should be replaced immediately while avoiding to touch it without any protection.



Service and Inspection Precautions

1. Obey precautionary markings and instructions

Labels and stamps on the cabinet, chassis, and components identify areas requiring special precautions. Be sure to observe these precautions, as well as all precautions listed in the operating manual and other associated documents.

2. Use designated parts only

The set's components possess important safety characteristics, such as noncombustibility and the ability to tolerate large voltages. Be sure that replacement parts possess the same safety characteristics as the originals. Also remember that the Δ mark, which appears in circuit diagrams and parts lists, denotes components that have particularly important safety functions; be extra sure to use only the designated components.

3. Always follow the original design when mounting parts and routing wires

The original layout includes various safety features, such as inclusion of insulating materials (tubes and tape) and the mounting of parts above the printer board. In addition, internal wiring has been routed and clamped so as to keep it away from hot or high-voltage parts. When mounting parts or routing wires, therefore, be sure to duplicate the original layout.

4. Inspect after completing service

After servicing, inspect to make sure that all screws, components, and wiring have been returned to their original condition. Also check the area around the repair location to ensure that repair work has caused no damage, and confirm safety.

5. When replacing chip components...


Never reuse components. Also remember that the negative side of tantalum capacitors is easily damaged by heat.

6. When handling flexible print boards...

- The temperature of the soldering-iron tip should be about 270C.
- Do not apply the tip more than three times to the same pattern.
- Handle patterns with care; never apply force.

Caution: Remember that hard disk drives are easily damaged by vibration. Always handle with care.

**ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!**

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

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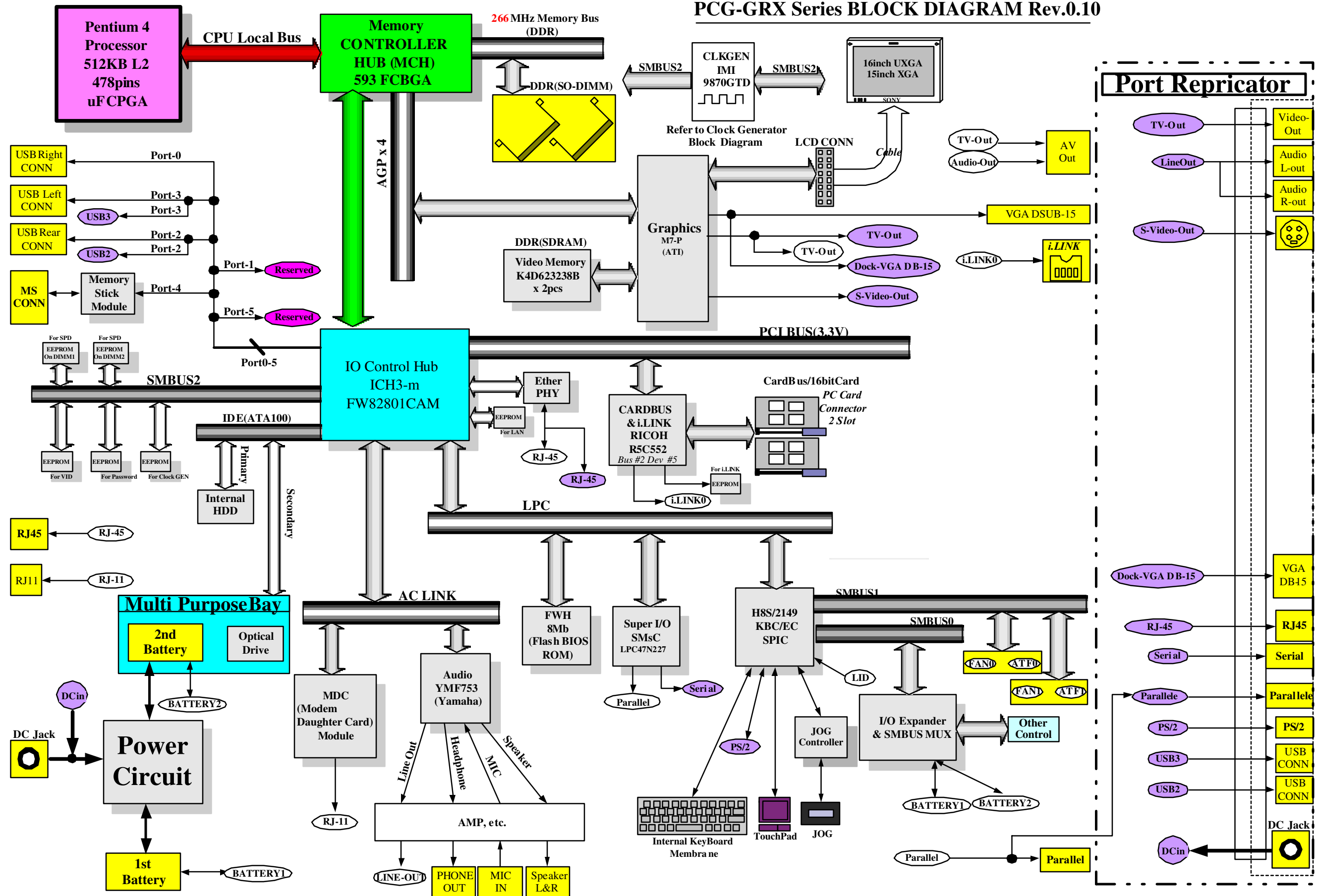
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History of the changes is shown as the
“Revision History” at the end of this data.

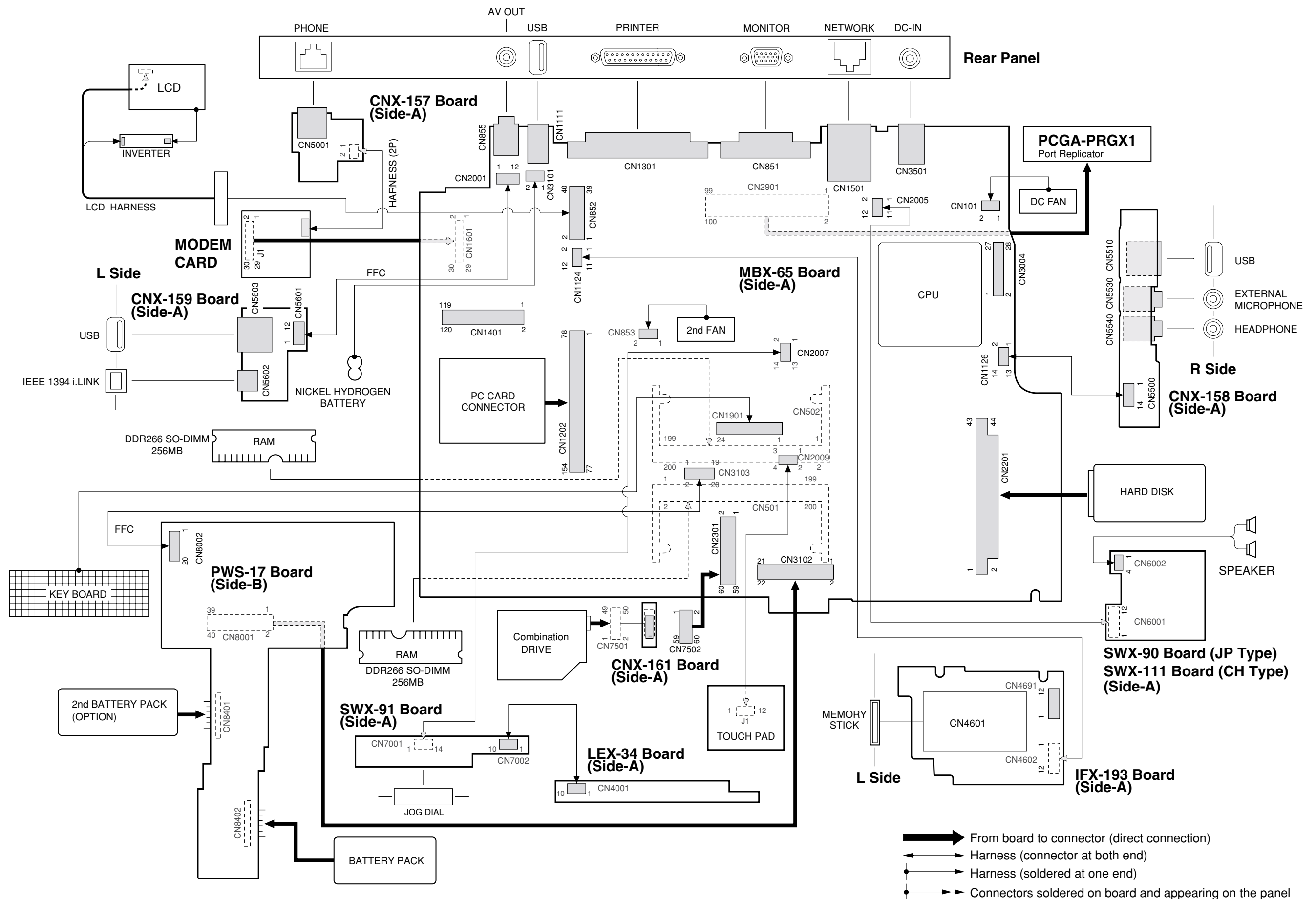
CHAPTER 1. BLOCK DIAGRAM

PCG-GRX Series BLOCK DIAGRAM Rev.0.10



CHAPTER 2.

FRAME HARNESS DIAGRAM



CHAPTER 3.

EXPLODED VIEWS AND PARTS LIST

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked “ * ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- When two or more parts are shown in parallel, use the part described first as the main part.
- The indication [CH] is used for identification of part type.
- Regarding the boards of this model, the discrete parts on the boards cannot be replaced. However, Some connectors can be replaced.

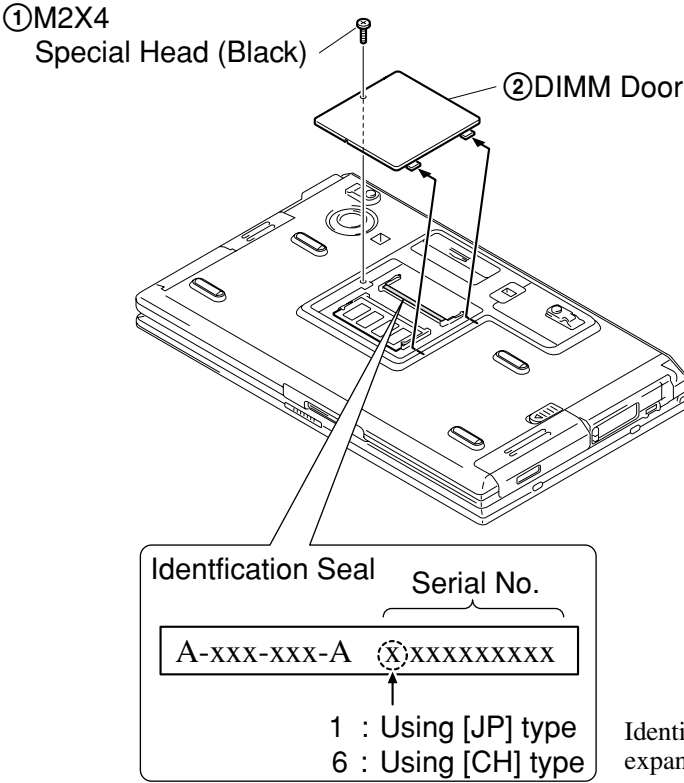
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

How to use properly the repair parts.

There are some parts that use the 2 types ; the [CH] parts or alternately the [JP] parts, in this series.
Use the [CH] repair parts for the [CH] type product, vice versa.

[How to identify the parts]



[Repair part description example]

Ref.No.	Part No.	Description
999	A-8110-582-A	[CH]...MBX-65 ASSY (C) (S)
999	4-8067-424-A	[JP]...MBX-65 ASSY (S)

*About Repair level of mounted board.

JP type... Component level service is possible. Refer to this manual for details.

CH type... Do not execute the component level service in principle.

However, some of the connectors can be repaired by the component level service.

Refer to “Connector Section” of this manual for details.

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PCG-GRX520/GRX520K/GRX520P/
PCG-GRX560/GRX560K/GRX560P/
PCG-GRX580/GRX580K/GRX580P/GRX650 (AM)

3-1. Main Section

Ref.No.	Part No.	Description
1	4-660-888-01	ESCUSHION TACHPAD
2	1-796-166-21	PAD, TOUCH
3	X-4624-531-4	ASSY PALMREST
4	4-660-904-01	CUSHION PALMREST
5	4-660-906-01	SPRING BLIND
6	4-660-906-11	SPRING BLIND
* 7	4-660-900-01	PLATE ARM LEFT
* 8	4-660-901-01	PLATE ARM RIGHT
9	1-761-518-11	PWB, FLEXIBLE PRINT
10	4-662-607-01	THERMAL SHEET FET
* 11	4-660-903-01	BRACKET TOUCHPAD
12	X-4624-620-2	ASSY BEZEL COMBO (CNC)
13	8-458-828-71	RW DRIVE CRX810E-VN
14	4-664-561-01	ADHESIVE TAPE
15	4-662-272-01	LAVEL COMBO DRIVE
16	4-654-837-01	SHEET BAY BOARD
17	A-8059-942-A	[JP]...COMPLETE PWB CNX-161
17	A-8067-477-A	[CH]...CNX-161 ASSY (C) (S)
18	4-660-860-03	CASE BAY
19	X-4624-533-2	ASSY PLATE KEYBOARD
20	X-4624-528-1	ASSY BRACKET BAY
21	1-823-721-12	CABLE, FLEXIBLE FLAT
22	4-661-289-01	INSULATOR PWS
23	A-8059-944-A	[JP]...COMPLETE PWB PWS-17
23	A-8067-479-A	[CH]...PWS-17 ASSY (C) (S)
24	1-815-594-21	CONNECTOR, PC CARD(EJECT,RIGHT)
25	4-660-831-01	INSULATOR PCMCIA
26	1-761-380-23	CARD, MODEM
27	1-761-519-11	PWB, FLEXIBLE PRINT
* 28	4-660-852-02	HEATSINK GHC
* 29	1-763-828-11	2ND FAN
30	4-660-836-01	THERMAL SHEET GHC
31	1-756-281-11	BATTERY, NICKEL HYDROGEN
32	4-642-711-01	SHEET (BATTERY), ADHESIVE
33	4-660-835-01	THERMAL SHEET CPU
34	6-702-112-01	(GRX580/GRX580P/GRX580K)... IC RH80532GC029512 (P4 1700MHz)
34	6-702-111-01	(GRX520/GRX520P/GRX520K/ GRX560/GRX560P/GRX560K)... IC RH80532GC025512 (P4 1600MHz)
34	6-702-580-01	(GRX650)... IC RH80532GC033512 (P4 1800MHz)
35	1-960-827-61	HARNES (2 PIN)
36	A-8059-939-A	[JP]...COMPLETE PWB CNX-157
36	A-8067-474-A	[CH]...CNX-157 ASSY (C) (S)
37	4-660-876-01	PLATE DC JACK
38	4-660-853-01	THERMAL FIN
* 39	1-763-829-11	CPU FAN
40	4-660-796-01	THERMAL SHEET COIL
41	4-660-445-02	BRACKET BATTERY
* 42	X-4624-936-1	ASSY (SUBFRAME) (BOTTOM) (RIGHT)
43	A-8059-940-A	[JP]...COMPLETE PWB CNX-158
43	A-8067-475-A	[CH]...CNX-158 ASSY (C) (S)
44	4-660-823-02	BRACKET DOOR R
45	4-661-272-02	INSULATOR BOARD AUDIO
* 46	4-660-905-01	HOLDER HDD
* 47	4-660-451-01	PLATE GND HDD
48	4-663-115-01	FOOT REAR FIXED
49	4-660-861-02	DOOR BATTERY
50	4-660-443-01	SPRING DOOR BATTERY
51	4-660-862-21	DOOR DIMM
* 52	4-660-447-01	SUB-FRAME BATTERY
53	A-8059-943-A	[JP]...COMPLETE PWB LEX-34
53	A-8067-480-A	[CH]...LEX-34 ASSY (C) (S)

Ref.No.	Part No.	Description
* 54	X-4624-529-2	[JP]...ASSY BRACKET IO
* 54	X-4624-902-1	[CH]...ASSY BRACKET IO
55	1-823-725-12	CABLE, FLEXIBLE FLAT
56	1-823-723-13	CABLE, FLEXIBLE FLAT
57	A-8059-945-A	[JP]...COMPLETE PWB SWX-91
57	A-8067-478-A	[CH]...SWX-91 ASSY (C) (S)
58	4-653-745-01	SPRING BAY
59	4-659-630-02	LATCH BAY
60	X-4624-530-2	ASSY DOOR MODEM
61	4-661-288-01	INSULATOR DOOR MODEM
* 62	4-660-448-01	SUB-FRAME BAY
63	X-4624-538-2	ASSY DOOR L
64	4-660-822-03	BRACKET DOOR L
65	4-660-452-01	HINGE BASE LEFT
66	4-660-872-01	INSULATOR HEATSINK BOTTOM
67	A-8059-941-A	[JP]...COMPLETE PWB CNX-159
67	A-8067-476-A	[CH]...CNX-159 ASSY (C) (S)
68	4-660-544-02	CAP MODEM
69	4-660-864-02	DOOR IO
70	4-660-874-01	LABEL IO
71	1-823-724-12	CABLE, FLEXIBLE FLAT
72	4-660-887-02	DISPLAY BASE
73	1-477-285-21	KEYBOARD UNIT (U)
74	X-4624-605-4	ASSY HOOD KEYBOARD
75	1-825-081-11	SPEAKER, (2.8CM) BOX WITH
76	1-823-719-12	CABLE, FLEXIBLE FLAT
77	A-8059-936-A	[JP]...COMPLETE PWB IFX-193
78	1-823-720-12	CABLE, FLEXIBLE FLAT
79	A-8059-934-A	[JP]...COMPLETE PWB SWX-90
79	A-8110-249-A	[CH]...COMPLETE PWB SWX-111A2
80	A-8059-666-A	(GRX580/GRX580P/GRX580K)... ASSY HDD 40GB (T,20,F) (S)
80	A-8059-344-A	(GRX520/GRX520P/GRX520K/ GRX560/GRX560P/GRX560K/GRX650)... ASSY HDD 30GB (T,20,F) (S)
* 81	4-653-799-02	BRACKET HDD
82	X-4624-536-2	ASSY DOOR HDD
83	4-653-801-02	SHEET HDD
84	X-4624-532-2	ASSY ESCUSHION JOG
85	X-4624-539-2	ASSY DOOR R
* 87	4-660-449-01	SUB-FRAME BOTTOM LEFT
88	6-600-080-01	IC M470L3224BT0-CB0 (DDR266 SO-DIMM 256MB)
88	6-600-093-01	IC HYMD232M6466-H (DDR266 SO-DIMM 256MB)
89	4-662-961-01	SHEET BLIND L
90	4-654-953-01	SHEET PORT
91	4-662-926-02	INSULATOR HDD PWB
92	4-660-868-01	FOOT FRONT
93	X-4624-527-4	ASSY BOTTOM
94	4-660-866-02	DOOR PORT
95	4-662-798-01	PLATE GND PWS
96	A-8067-472-A	[JP]...MBX-65 ASSY (S)
96	A-8067-473-A	[CH]...MBX-65 (C) ASSY (S)
97	4-654-380-21	CAP BAY
98	4-664-333-01	CUSHEET DOOR R
99	4-664-547-01	SHEET PPC
100	4-664-632-01	SPACER K
105	4-664-561-01	ADHESIVE TAPE
110	1-793-365-11	[JP]...CONNECTOR, USB (A)

Ref.No.	Part No.	Description
111	1-793-162-11	[JP]...JACK, SMALL TYPE
112	1-695-514-21	[JP]...JACK (SMALL TYPE) 1P
113	1-779-745-21	[JP]...JACK, DC
114	1-815-221-22	[JP]...CONNECTOR, USB (A)
115	1-694-761-11	[JP]...JACK, SMALL TYPE
116	1-794-548-11	[JP]...CONNECTOR, USB(A)
117	4-662-984-01	INSULATOR DOOR DIMM
120	4-664-060-31	(GRX560P)...LABEL ID (U)
120	4-664-060-41	(GRX560)...LABEL ID (U)
120	4-664-060-51	(GRX560K)...LABEL ID (U)
120	4-664-060-61	(GRX520P)...LABEL ID (U)
120	4-664-060-71	(GRX520)...LABEL ID (U)
120	4-664-060-81	(GRX520K)...LABEL ID (U)
120	4-665-654-11	(GRX580P)...LABEL ID (U)
120	4-665-654-21	(GRX580)...LABEL ID (U)
120	4-665-654-31	(GRX580K)...LABEL ID (U)
120	4-665-654-51	(GRX650)...LABEL ID (U)
121	4-663-828-02	SPACER PC CARD
122	4-663-827-01	CUSHION KEYBOARD
126	4-663-230-02	CUSHION HOOD
127	4-663-227-01	CUSHION IO
128	4-664-048-01	INSULATOR FAN
129	4-664-308-02	SHEET JOG
130	4-655-927-03	SPRING (DVD-ROM)
131	4-664-285-01	CUSHION KEYBOARD R
132	4-661-644-01	SHEET, EYE CONVERTER
133	4-664-362-01	CUSHION IO LEFT
134	4-664-363-01	CUSHION SPRING BLIND R
135	4-664-482-01	SPACRER HINGE L
136		FILAMENT TAPE (W12X30) (*1)
138	4-665-909-01	INSULATOR BAY2
139	4-666-111-01	SHEET AUDIO GND
140	4-666-114-01	SHIELD TAPE BRACKET IO A
141	4-665-467-01	SPACER BATTERY (K)

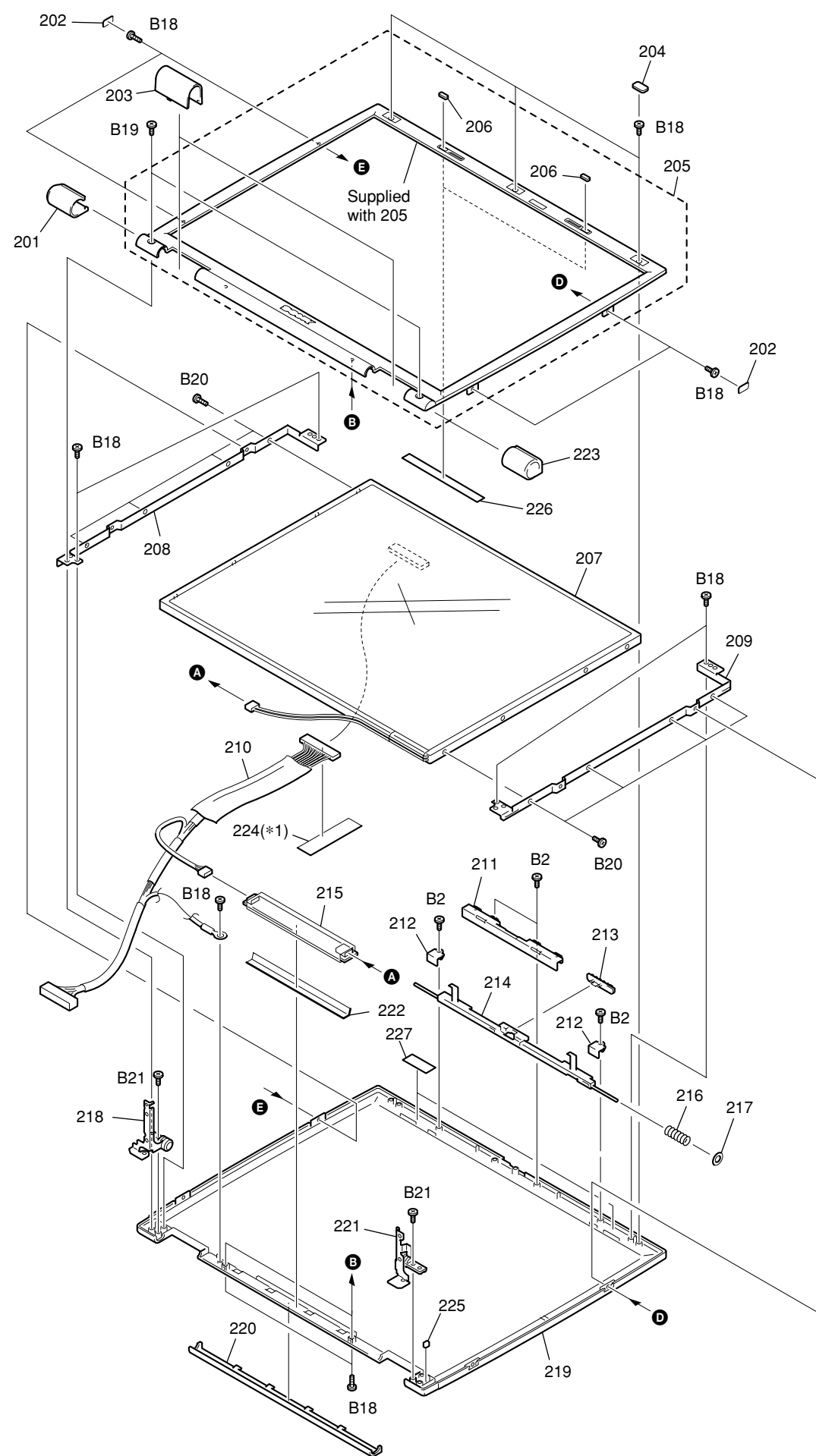
*1 Use the FILAMENT TAPE.

The GRX650 uses only the [CH] Type parts and assemblies.
The [JP] Type parts and assemblies are not used.

Ref.No.	Part No.	Description
B1	4-641-726-41	SCREW (M2), SPECIAL HEAD
B2	4-641-726-12	SCREW (M2), SPECIAL HEAD
B3	7-621-772-70	SCREW +B 2X14
B4	4-654-387-01	SCREW (MBX)
B5	4-641-656-12	SCREW (M2.5), 0 PLATE P
B6	4-656-703-01	SCREW M2
B7	4-635-301-01	SCREW M3X4
B8	4-639-112-01	SCREW M2X4
B9	4-635-966-01	SCREW (HEX)
B10	4-642-852-01	+B M2
B11	4-654-386-01	SPACER (PWS)
B12	7-622-205-05	NUT M2 TYPE2
B13	4-651-989-01	SPACER (MBX)
B14	4-661-248-01	SPACER 4MM
B15	4-641-726-81	SCREW (M2), SPECIAL HEAD
B16	4-654-811-01	SCREW M3
B17	4-657-192-01	SCREW, TAPPING, SPECIAL

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3-2. LCD Section (GRX560/GRX560K/GRX560P/GRX580/
GRX580K/GRX580P/GRX650) – Made by HI –



Ref.No.	Part No.	Description
201	4-660-847-01	CAP LCD L
202	4-660-851-01	LCD SCREW COVER S
203	4-660-897-01	COVER HINGE
204	4-660-850-01	LCD SCREW COVER T
205	X-4624-525-3	ASSY BEZEL
206	4-660-846-02	LATCH RUBBER
207	A-8059-922-A	ASSY LCD 16U (HI) (S)
* 208	4-660-839-02	BRACKET LCD L
* 209	4-660-840-02	BRACKET LCD R
210	1-961-573-12	HARNESS (LCD)
211	4-660-844-02	LATCH HOLDER LCD
212	4-660-828-01	LATCH GUIDE
213	4-660-907-01	LATCH BOTTON
214	4-660-843-02	LATCH LEVER
215	1-477-101-11	INVERTER UNIT
216	4-663-929-02	SPRING (LCD) (16)
217	4-663-477-02	SPACER LATCH
* 218	X-4624-534-2	ASSY HINGE L
219	X-4624-847-1	ASSY DISPLAY (F)
220	4-660-849-02	CAP LCD C
* 221	X-4624-535-2	ASSY HINGE R
222	4-662-783-03	INSULATOR INVERTER
223	4-660-848-01	CAP LCD R
224		FILAMENT TAPE (W19X50) (*1)
225	4-664-545-01	SPACER (HINGE) (16) (R)
226	4-664-314-01	SHEET (LCD) (BEZEL UP)
227	4-664-062-01	SHEET LCD LATCH

*1 Use the FILAMENT TAPE.

Ref.No.	Part No.	Description
B2	4-641-726-12	SCREW (M2), SPECIAL HEAD
B18	4-645-214-61	GRIP, M2
B19	4-644-637-01	GRIP, M2 EG
B20	7-621-259-25	SCREW +P 2.6X4
B21	4-663-482-11	M2 SCREW (HARDENING)

NOTE :

Set the DIP switch on the MBX-65 board (Main board) to match with the LCD that is used in this computer.

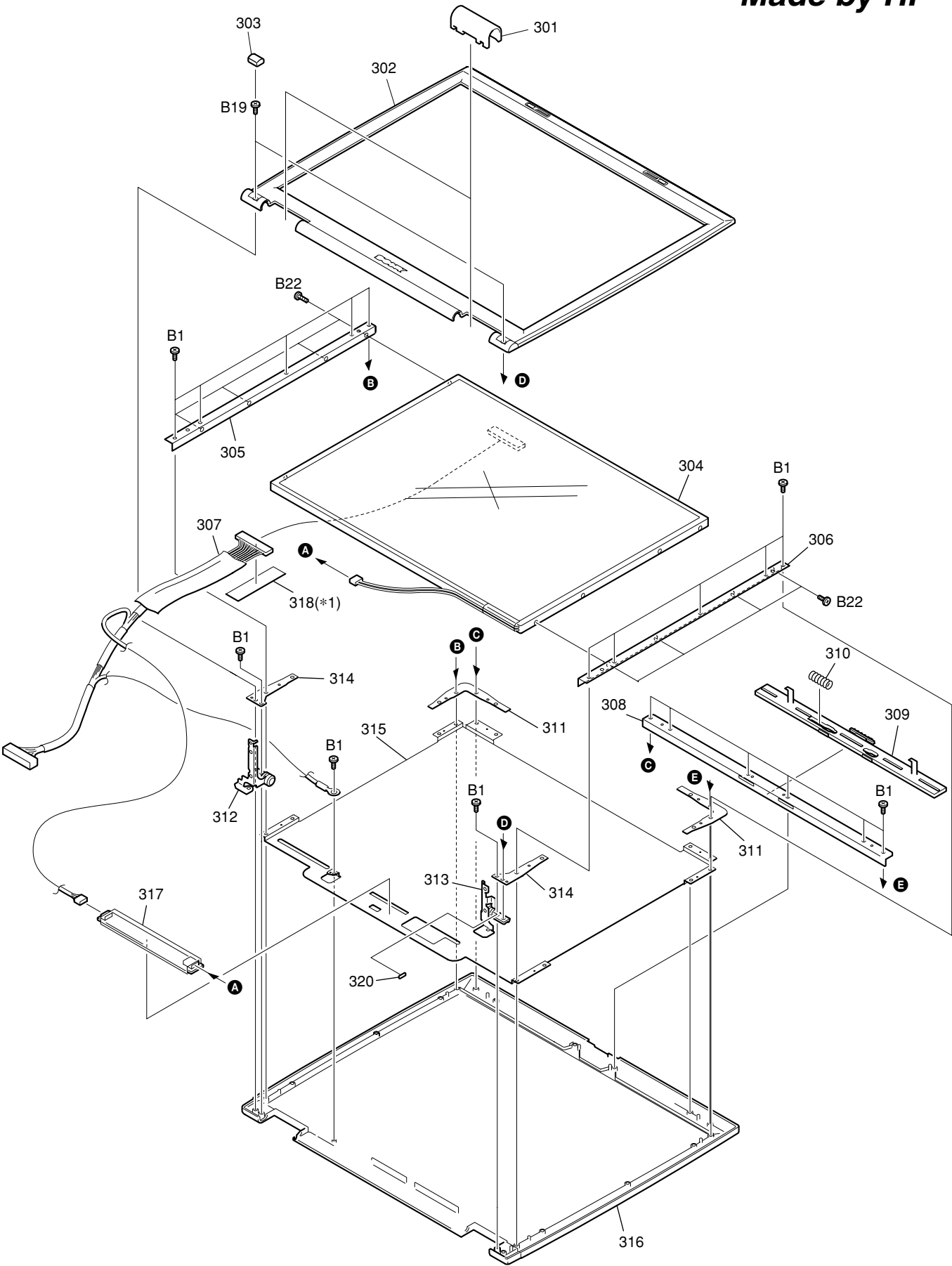


The upper position where ON indication is shown is the ON position . The lower position is the OFF position.

No.	1	2	3	4	5	6	7	8
ON/OFF	1	0	1	1	1	0	1	1

0 : ON 1: OFF

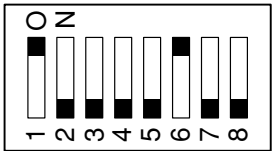
3-3. LCD Section (GRX520/GRX520K/GRX520P)
– Made by HI–



Ref.No.	Part No.	Description
301	4-660-897-01	COVER HINGE
302	X-4624-586-3	ASSY BEZEL DISPLAY 15
303	4-660-919-01	COVER SCREW LOWER 15
304	A-8067-507-A	ASSY LCD 15HI AP(S)
* 305	4-660-912-01	BRACKET LCD L 15
* 306	4-660-913-01	BRACKET LCD R 15
307	1-961-573-21	HARNESS (LCD)
* 308	4-660-914-01	BRACKET LCD UPPER 15
309	4-660-911-02	LATCH LEVER 15
310	4-653-745-01	SPRING BAY
* 311	4-660-916-01	PLATE LCD UPPER 15
* 312	X-4624-534-2	ASSY HINGE L 15
* 313	X-4624-535-2	ASSY HINGE R 15
* 314	4-660-915-01	PLATE LCD LOWER 15
315	4-660-918-01	SEALED LCD 15
316	X-4624-587-3	ASSY HOUSING DISPLAY 15
317	1-476-316-11	INVERTER UNIT
318		FILAMENT TAPE (W19X50) (*1)
320	4-664-546-01	SPACER (HINGE) (15) (R)
321	4-660-921-02	TAPE LCD 15
B1	4-641-726-41	SCREW (M2), SPECIAL HEAD
B19	4-644-637-01	GRIP, M2 EG
B22	4-641-726-81	SCREW (M2), SPECIAL HEAD

*1 Use the FILAMENT TAPE.

NOTE :
Set the DIP switch on the MBX-65 board (Main board) to match with the LCD that is used in this computer.

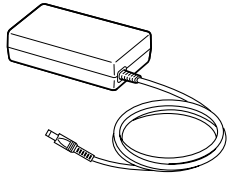


The upper position where ON indication is shown is the ON position . The lower position is the OFF position.

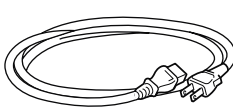
No.	1	2	3	4	5	6	7	8
ON/OFF	0	1	1	1	1	0	1	1
0 : ON 1: OFF								

Ref.No.	Part No.	Description
ACCESSORIES *****		
△ 801	1-477-205-41	ADAPTOR, AC
802	A-8067-482-A	BP2NX SKD (U) ASSY (S)
△ 803	1-757-562-21	CORD, POWER
804	4-660-884-02	WEIGHT SAVER (Refer to page 3-5.)
	4-664-802-01	QUICK START
	4-664-799-01	SPECIFICATION SHEET
	4-646-847-11	W2K FIRST STEP GUIDE

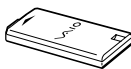
801
AC Adaptor (1)



803
Power Cord (1)



802
Battery Pack (1)



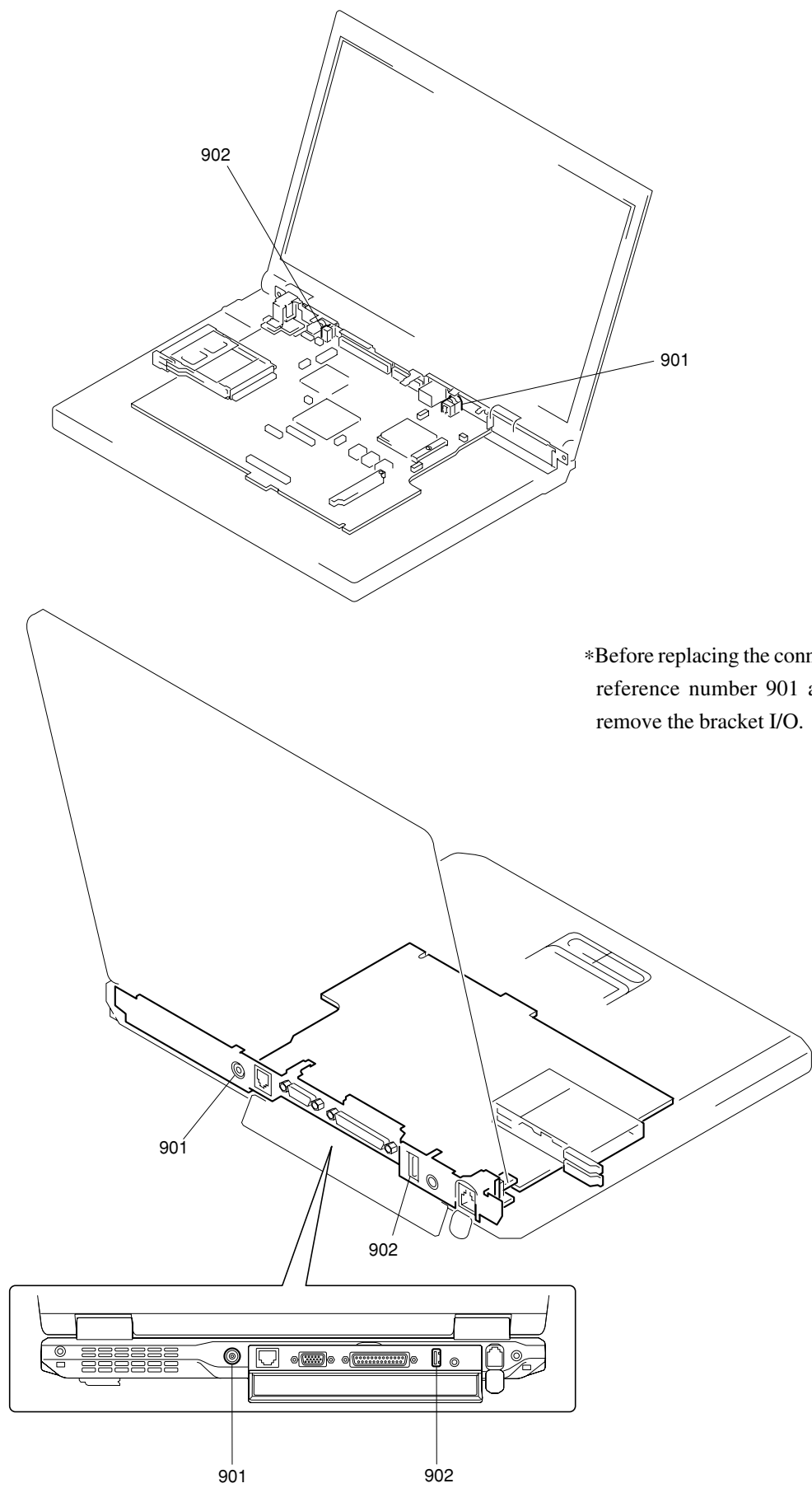
804
Weight Saver (1)



The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

3-4. Connector Section (CH Type only)



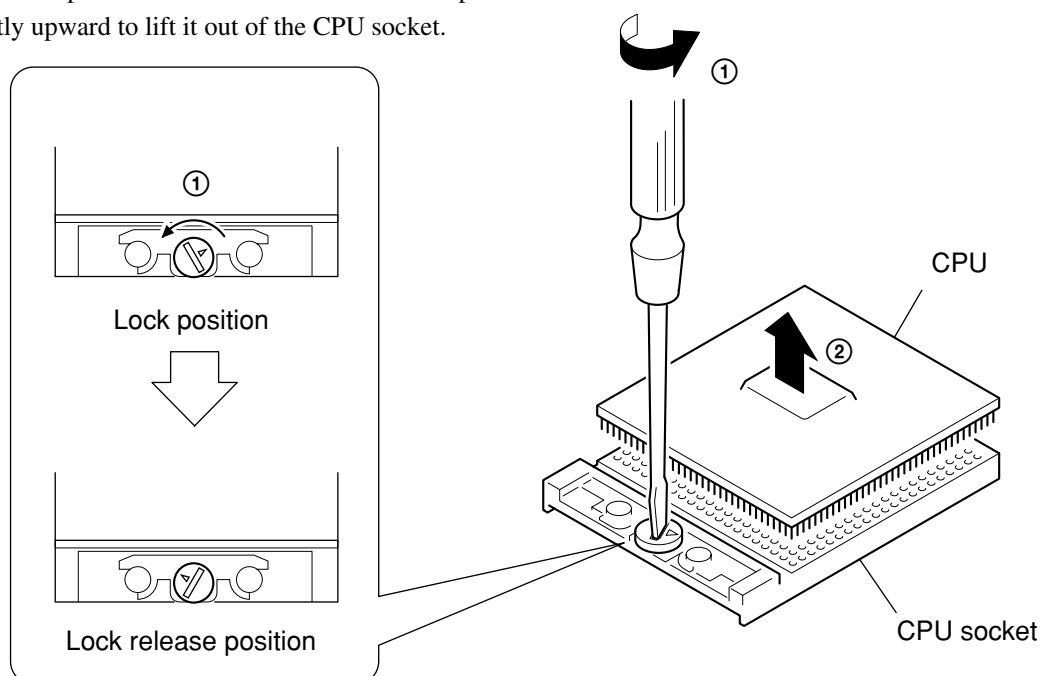
Ref.No.	Fig.	Part No.	Description
901		1-779-745-21	[CH]...JACK, DC DC IN connector
902		1-815-221-22	[CH]...USB CONNECTOR (VERTICAL) USB connector

* Among the parts that are used on the boards of this model, only the connectors that are show in the list can be replaced.
(The parts other that the specified connectors cannot be replaced.)

4-1. Replacing the CPU

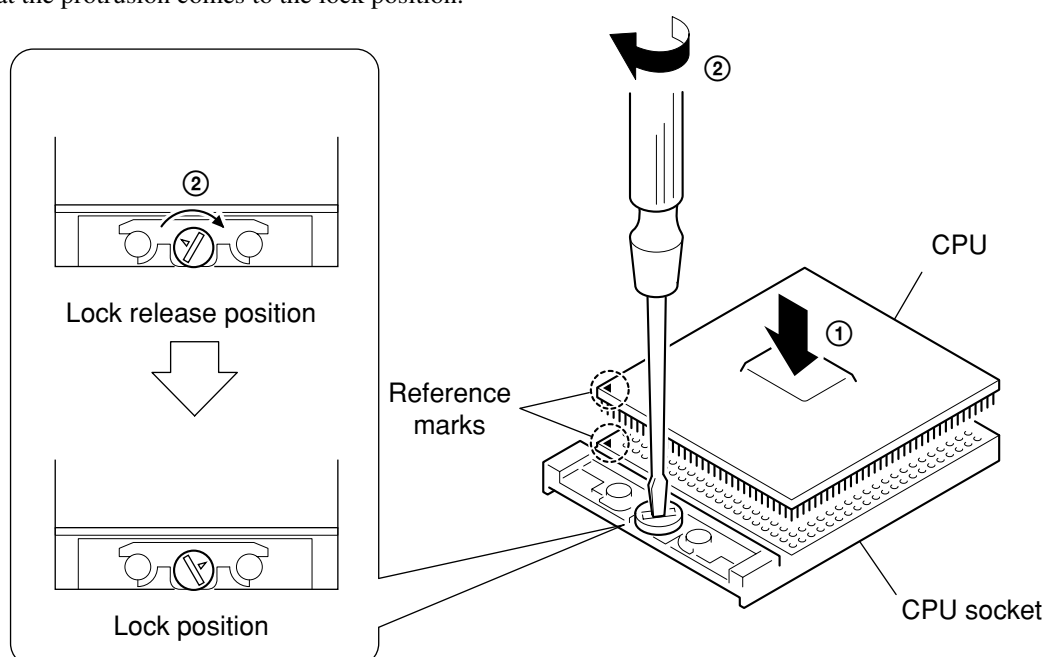
1. Removing the CPU

- ① Insert a flat-blade screwdriver into the notch as shown in the illustration and rotate it so that the protrusion comes to the lock release position.
- ② Pull the CPU gently upward to lift it out of the CPU socket.



2. Installing the CPU

- ① Align the triangle reference mark of the CPU with that of the CPU socket and insert all the pins of the CPU to the corresponding holes of the CPU socket.
- ② Insert a flat-blade screwdriver into the notch as shown in the illustration and rotate it so that the protrusion comes to the lock position.



NOTE:

Rotate a flat-blade screwdriver to the lock position securely. If not, the operation of the CPU may become unstable.


Confidential



PCG-GRX520/GRX520K/GRX520P/GRX560/GRX560K/
PCG-GRX560P/GRX580/GRX580K/GRX580P/**GRX650** (AM)

List of PCG-GRX Series (As of September, 2002)

Model Name	Service Manual Part No.
PCG-GRX590 PCG-GRX570 PCG-GRX550 PCG-GRX510	9-874-524-01
PCG-GRX580P PCG-GRX580K PCG-GRX580 PCG-GRX560P PCG-GRX560K PCG-GRX560 PCG-GRX520P PCG-GRX520K PCG-GRX520 PCG-GRX650	9-874-542-02

 : Additional Models



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Revision History

Suffix	Ver.	Date	Contents	QM No.
-01	Ver. 1	2002.06.10	First Edition	
-02	Ver. 2	2002.09.03	Front Page (Model Line Up), Page 3-3, Page 3-4, Page 3-7, Back Cover	2002_100AK#01
< Remarks >				